

**FACT SHEET FOR STATE WASTE DISCHARGE PERMIT NO. ST 5037**  
**Morton International Inc.**

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## **INTRODUCTION**

This fact sheet is a companion document to the draft State Waste Discharge Permit No. 5037. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to the City of Elma Wastewater Treatment Plant. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.160) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. This statute includes commercial or industrial discharges to sewerage systems operated by municipalities or public entities that discharge into public waters of the state. Regulations adopted by the state include procedures for issuing permits and establish requirements which are to be included in the permit (Chapter 173-216 WAC).

This fact sheet and draft permit are available for review by interested persons as described in Appendix A—Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D—Response to Comments.

<b>GENERAL INFORMATION</b>	
Applicant:	Morton International Inc.
Facility Name and Address:	Elma Plant: 4800 State Route 12, Elma, WA 98541
Type of Facility:	Inorganic Chemical Manufacturing
Facility Discharge Location:	To Sewer: Latitude: 46° 59' 42" N Longitude: 123° 23' 00" W To Surface: Latitude: 47° 00' 02" N Longitude: 123° 25' 22" W
Treatment Plant Receiving Discharge:	Elma Wastewater Treatment Plant
Contact at Facility:	Name: Eugene E. Sturbis Telephone #: (360) 482-4691
Responsible Official:	Name: Eugene E. Sturbis Title: Facility Manager Address: 4800 State Route 12, P.O. Box 1224, Elma WA 98541-1224 Telephone #: (360) 482-4691 FAX # (360) 482-4691

## **BACKGROUND INFORMATION**

### *DESCRIPTION OF THE FACILITY*

Morton International, formerly known as Morton Thiokol, owns and operates an inorganic chemical processing facility in Elma, Washington. The facility manufactures boron compounds that is used by the paper making, pharmaceuticals and chemical industries. The facility has a single outfall to the Elma sanitary sewer system for discharges of process wastewater, contaminated stormwater, and sanitary wastewater. Morton International is a Significant Industrial User since its permitted average flow exceeds 25,000 gpd and 5 percent of the POTW hydraulic design capacity (24,000 gpd).

### **HISTORY**

This facility began operations in April 1976, making sodium borohydride. A major addition to this plant was added in 1995-1997 to make dry sodium borohydride. Increased production has not led to a significant increase in the wastewater stream since the new process is by the definition of the process a dry (non-discharging) procedure. Morton International has a well-run production facility with an excellent record of compliance with its permits.

### **INDUSTRIAL PROCESSES**

The Elma plant of Morton International, Inc. produces wet and dry products of sodium borohydride, potassium borohydride, trimethylborate pure and trimethylborate azeo. Sodium hydroxide is also produced as a by-product. Raw materials used in sodium borohydride production include sodium, a source of boron (typically boric acid or anhydrous boric acid), and hydrogen produced from steam and natural gas. Potassium borohydride uses potassium hydroxide as a raw materials in addition to the raw material listed above. Non-consumptive use is made of mineral oil and methanol in the process, but these materials are recovered and reused. The sodium borohydride production facility in Elma, Washington, is subdivided into two processes: sodium borohydride manufacturing (SBH or LSBH) and dry sodium borohydride production (DSBH). An on-site laboratory serves as quality control for both processes.

This is a renewal of an existing permit for a facility that has been permitted since it began operating in 1976.

The production of liquid sodium borohydride has remained steady over the life of the existing permit, but dry sodium borohydride production has increased 30 percent during the same period. The production of dry sodium borohydride is expected to increase about 35 percent over current production when a new dryer is installed in 2001. The only seasonal variation at this plant is the variability of stormwater runoff with the seasons.

The facility operates two shifts of 12 hours, 7 days a week, employing 12 operators and 1 supervisor per shift.

The following chemicals are stored at the plant: lubricating oil, sulfuric acid, IPA, acetone, fuel oil #2, lithium chloride, various water treatment chemicals and catalysts, diatomaceous earth, janitorial supplies, mineral oil, Norite, methanol, sulfuric acid, magnesium carbonate, paints, greases, carbon dioxide, Cabosil, miscellaneous laboratory reagents, HTO, and nitrogen.

Best management practices employed are careful regulation, compliant storage of chemicals, recycling of methanol and mineral oil used in the process, water, and evaporation of approximately two thirds of the wastewater.

Only the wet process generates significant quantities of process wastewater. This process proceeds as follows: In one process area, boric acid and methanol are reacted to form an intermediate trimethylborate  $[B(OCH_3)_3]$ , TMB. In a second process area, sodium and hydrogen from natural gas are reacted in a process oil medium to form another intermediate, sodium hydride (NaH). These two intermediates are then reacted in a third process area to form sodium borohydride ( $NaBH_4$ ). In the fourth process area, the  $NaBH_4$  is separated from the process oil, then water is added and the resulting solution is purified. The resulting material is a water-based solution of  $NaBH_4$  (12 percent) and caustic (40 percent), which is shipped by tank truck and rail car.

#### TREATMENT PROCESSES

The wastewater is pretreated by a two-staged vapor recompression evaporator. Depending on the weather and the amount of water needed for the process, the distillate is pumped into the Elma sanitary sewer along with the potentially contaminated cooling water and steam boiler blow down and sanitary waste which require no pretreatment. The flow is monitored continuously for pH prior to discharge.

The previous permit for this facility was issued on May 12, 1997, and modified on October 28, 1998. An application for permit renewal was submitted to the Department on August 6, 1999.

#### *SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT*

The facility last received an inspection on February 19, 1998.

During the period of the existing permit, Morton International has shown good general compliance with the permit, based on discharge monitoring reports (DMRs) and other submittals furnished to the Department and compliance inspections conducted by the Department.

Morton International's response to all exceedances of the permit limits has been to take immediate action to correct all problems. No upsets of the treatment process have been reported by the Elma POTW.

#### *PERMIT STATUS*

The previous permit for this facility was issued on May 12, 1997 and modified on October 22, 1998.

### WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in discharge monitoring reports. The proposed wastewater discharge is characterized for the following parameters for the period September 1991 through March 1996.

Parameter	Unit	Limit	Average
<b>AVERAGE</b>			
Flow	gpd	25,000	16,294
Boron, Concentration	mg/l	5	0.9
Boron, Mass	lbs/day	1.04	0.16
COD, Mass	lbs/day	167	38
<b>MAXIMUM</b>			
Flow	gpd	36,000	23,864
Boron, Concentration	mg/l	75	3.57
Boron, Mass	lbs/day	22.5	0.56
BOD, Mass	lbs/day	375	24.38
BOD, Concentration	mg/l	1250	144
COD, Mass	lbs/day	600	126
TSS, Mass	lbs/day	30	15
Oil & Grease, Concentration	mg/l	50	15.1

### PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be based on the technology available to treat the pollutants (technology-based) or be based on the effects of the pollutants to the POTW (local limits). Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not interfere with the operation of the POTW.

The minimum requirements to demonstrate compliance with the AKART standard and specific design criteria for this facility were determined for the previous permit.

The more stringent of the local limits-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

### TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Technology-based limits for wastewater discharge are determined in various ways. For an industry where no limits have been determined by research and codified by the EPA, several approaches are possible. Sometimes the receiving POTW has a city ordinance limiting discharge, but Elma does not have such limitations. The limits for this permit have been determined as follows:

Flow: The flow for this discharge is a mixture of process water and rainwater during storms. The volume of process water from the process is well known. For this permit, the rainfall will be taken as the area of the contributing facilities multiplied by the rainfall depth predicted for a 50 year return frequency storm. This method differs from that previously used in its measure of rainfall because the Department has issued a hydrology manual since the last permit was written.

Calculation for this flow limit is as shown in Appendix C. Morton International has an agreement with the Elma to reserve a capacity of 70,000 gpd based on average flow.

**Boron:** Boron is measured for this permit because it is the principal ingredient of the product of this plant. While boron is relatively non-toxic, it can cause physical effects in laboratory animals in very large doses. It has not been shown to cause POTW interferences, pass through problems, or sludge contamination. The previous limits are retained since they have not been exceeded in the previous permit period, the present limits are well below the concentrations believed toxic and there is no compelling reason for changing them.

**COD:** COD average and mass loadings are an indication of the amount of methanol escaping from the recovery process limits. Changes in the treatment process have made a statistical analysis of the previous test results inappropriate, as was shown in the Statement of Basis that accompanied the Permit Modification dated October 22, 1998. This permit modification was a result of the Stipulation and Order of Agreement No. 97-86 dated October 3, 1998. The Permittee showed that there was a definite and constant historical correlation of COD to BOD. This correlation was used to establish the COD limit.

**BOD:** BOD maximum daily mass and BOD monthly average concentration are a measure of the biochemical oxygen demand that this facility transfers to the Elma wastewater treatment facility. The limits established in this permit are AKART as computed by the statistical analysis of the previous tests run between August 1995 and November 1996, the period during which the evaporator condensate ceased to be recycled. Test results for these 16 tests were analyzed for statistical consistency and a limit determined from this analysis. The correlation coefficient for both BOD data sets was 1, indicating perfect conformance of data in a normal distribution. The limits thus derived for the daily maximum concentration using the 99th percentile and the monthly average concentration using the 95th percentile are significantly lower than in the previous permit. Both of the new BOD limits have been exceeded only once since August 1995.

**TSS:** Total Suspended Solids is a measure of the mass of suspended solids that this facility transfers to the Elma wastewater treatment facility. The limits established in this permit are AKART as computed by the statistical analysis of the previous tests run between August 1995 and November 1996, the period during which the evaporator condensate ceased to be recycled. Test results for these 16 tests were analyzed for statistical consistency and a limit determined from this analysis. The correlation coefficient for both TSS data sets was 1, indicating perfect conformance of data in a normal distribution. The limits thus derived for the daily maximum using the 99th percentile are slightly higher than in the previous permit. The new TSS limit has not been exceeded since August 1995.

**Oil and Grease:** Oil and Grease is a measure of the concentration of suspended solids that this facility transfers to the Elma wastewater treatment facility. The limits established in this permit are AKART as computed by the statistical analysis of the previous tests run between August 1995 and November 1996, the period during which the evaporator condensate ceased to be recycled. Test results for these 16 tests were analyzed for statistical consistency and a limit determined from this analysis. The correlation coefficient for both oil and grease data sets was

1 indicating near perfect conformance of data in a normal distribution. The limits thus derived for the daily maximum using the 99th percentile is slightly higher than in the previous permit. The new limit has not been exceeded since August 1995.

pH: pH is a measure of the relative acid/base content of the wastewater. The 6 to 9 limit is common for all discharges to POTWs. Footnote d on the permit is intended to compensate for short pH excursions shown by continuous monitoring.

The development document for borax refining lists arsenic as a possible toxic waste. Although the process employed here uses refined boric acid, not raw borax, a check has been made to determine if arsenic is detectable in the plant. Tests of boric acid raw materials and several intermediate and final products and waste products have shown only one trace of arsenic since the plant began operations. This waste was evaporator sludge that is disposed of to a treatment, storage and disposal facility.

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

TABLE 1  
EFFLUENT LIMITATIONS

Parameters	MASS LOADING (LBS/DAY)	
	Monthly Average	Daily Maximum
Flow (GPD)	32,000	44,000
Boron	1.04	22.5
COD	600	1200
BOD <sub>5</sub>	N/A	175
TSS	N/A	31
Oil and Grease	2.9	4.0
pH	6 to 9 S.U. No exceedance lasting less than 15 minutes need be reported.	

Note: All boron-contaminated stormwater shall be treated by evaporation until the water level in the stormwater basin reaches four feet. When this occurs, excess stormwater may be tested and if appropriate pumped directly to the City of Elma sewer system while concurrently operating the evaporator at design capacity. When the water level in the storm drain storage basin drops below 3.5 feet,, direct pumping from the basin shall cease. This does not relieve the Permittee from meeting permit requirements. However, on such occasions, the quality and quantity of the discharge must be monitored by the Permittee and reported to the Department.



*EFFLUENT LIMITATIONS BASED ON LOCAL LIMITS*

There are no applicable local limits.

*COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT ISSUED MAY 12, 1997, AND MODIFIED  
OCTOBER 22, 1998*

TABLE 2  
LIMIT COMPARISON  
EXISTING VS. PROPOSED

MASS LOADINGS						CONCENTRATIONS				
Parameter	Mass Unit	Monthly Average Existing	Monthly Average Proposed	Daily Maximum Existing	Daily Maximum Proposed	Concentration Unit	Monthly Average Existing	Monthly Average Proposed	Daily Maximum Existing	Daily Maximum Proposed
Flow	gpd	25,000	32,000	36,000	44,000					
Boron	lbs/day	1.04	1.04	22.5	22.5	mg/l	5	0	75	0
COD	lbs/day	167	600	600	1,200	mg/l				
BOD <sub>5</sub>	lbs/day			375	375	mg/l			1,250	0
TSS	lbs/day			30	31	mg/l				
Oil & Grease	lbs/day			2.9	4.0	mg/l			53	0
pH	Range, S.U.								6 to 9	6 to 9

The existing permit (and all previous permits) set both mass and concentration limits. The reason for this is unknown. Morton International has consistently met both mass and concentration-based limits. Concentration-based permits discourage water conservation, a desirable environmental outcome. Since Morton International has shown a significant reduction in flow in the period January 1998 through September 1999 through conservation efforts, the concentration-based limits in this permit have been deleted. In addition, the standard AKART procedure for performance-based limit determination has been used to derive new flow limits (see Appendix C).

**MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly and that effluent limitations are being achieved (WAC 173-216-110).

All samples are taken at the lift station at the downstream limit of the plant sewers. This facility has a flowmeter, a 24-hour composite sampler, and a recording pH meter. See Attachment F1.

The monitoring schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

## **OTHER PERMIT CONDITIONS**

### *REPORTING AND RECORDKEEPING*

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges [WAC 273-216-110 and 40 CFR 403.12 (e),(g), and (h)].

### *OPERATIONS AND MAINTENANCE*

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

### *PROHIBITED DISCHARGES*

Certain pollutants are prohibited from being discharged to the POTW. These include substances which cause pass-through or interference, pollutants which may cause damage to the POTW or harm to the POTW workers (Chapter 173-216 WAC), and the discharge of designated dangerous wastes not authorized by this permit (Chapter 173-303 WAC).

### *DILUTION PROHIBITED*

The Permittee is prohibited from diluting its effluent as a partial or complete substitute for adequate treatment to achieve compliance with permit limitations.

### *SPILL PLAN*

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department

### *GENERAL CONDITIONS*

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to POTW permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending, or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with

approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes, or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the Permittee to control production or wastewater discharge in order to maintain compliance with the permit. Condition G10 prohibits the reintroduction of removed pollutants into the effluent stream for discharge. Condition G11 describes the penalties for violating permit conditions.

#### **PUBLIC NOTIFICATION OF NONCOMPLIANCE**

A list of all industrial users which were in significant noncompliance with pretreatment standards or requirements during any of the previous four quarters may be annually published by the Department in a local newspaper. Accordingly, the Permittee is apprised that noncompliance with this permit may result in publication of the noncompliance.

#### **RECOMMENDATION FOR PERMIT ISSUANCE**

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics. The Department proposes that the permit be issued to expire on June 30, 2005

*APPENDIX A--PUBLIC INVOLVEMENT INFORMATION*

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on September 8, 1996, in the Aberdeen Daily World to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on March 4, 2000, in the Aberdeen Daily World to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Southwest Regional Office  
P.O. Box 47775  
Olympia, WA 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6285, or by writing to the address listed above.

This permit was written by Gary Anderson.

APPENDIX B--GLOSSARY

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of the collection or treatment facility.

**Categorical Pretreatment Standards**--National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

**Class 1 Inspection**--A walk-through inspection of a facility that includes a visual inspection and some examination of facility records. It may also include a review of the facility's record of environmental compliance.

**Class 2 Inspection**--A walk-through inspection of a facility that includes the elements of a Class 1 Inspection plus sampling and testing of wastewaters. It may also include a review of the facility's record of environmental compliance.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Daily Maximum Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Engineering Report**--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater

facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Interference**--A discharge which, alone or in conjunction with a discharge or discharges from other sources, either: (1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; or (2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal.

**Local Limits**--Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

**Monthly Average**--The average of the measured values obtained over a calendar month's time.

**Pass-through**--A discharge which exits the POTW into the waters of the state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Significant Industrial User (SIU)**--Industrial dischargers to a POTW that have effluent limitations defined in a category (40 CFR 403.6 and 40 CFR chapter I, subchapter N). However, the control authority may make a determination that even though an industrial user belongs to a category that has effluent limits for pretreatment, that industry is not a significant industrial because there is no reasonable potential for affecting the POTW's operation. A SIU may also be any other industrial user that: 1. discharges an average of 25,000 gallons per day or more of process water, 2. makes up more than 5 percent of the average hydraulic flow (dry weather) or 5 percent of the organic capacity of the plant, or 3. the control authority believes has a reasonable potential to adversely affect the POTW's operation.

**Slug Discharge**--Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate which may cause interference with the POTW.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Coliform Bacteria**--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

**Total Dissolved Solids**--That portion of total solids in water or wastewater that passes through a specific filter.

**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

## APPENDIX C--TECHNICAL CALCULATIONS

### MAXIMUM FLOW

The design storm is a 50-year frequency storm of 7.3 inches. (National Weather Service Cooperative Observer at Elma, Washington, as submitted in the Application for Washington State Certification for WPPSS Nuclear Project No. 3, submitted to TPPSEC on July 15, 1974.)

The area intercepting potentially contaminated rainwater is 14,406 square feet. Therefore:

$$\text{Volume of runoff} = 1 \text{ day} \times 14,406 \text{ ft.}^2 \times 7.3 \text{ in.} \times (1 \text{ ft./12 inches}) \times (7.48 \text{ gals./ft.}^3) = 65,556 \text{ gallons/day}$$

Of this wastewater, five percent would be diverted and concentrated as boron waste.

In addition, the non-rainfall waste stream is 24,400 gallons per day. Therefore:

$$\text{Maximum Flow} = (0.95 \times 65,556) + 24,400 = 86,679 \text{ gallons.}$$

### AVERAGE FLOW

Assume that the maximum storm occurs once in the maximum rainfall month of January.

January maximum recorded rainfall = 23.61 inches.

Assuming that the maximum storm would occur in the same month as the maximum monthly rainfall then:

$$\text{Rainfall flow} = [(23.61 \text{ in.} + 7.3 \text{ in.})/3 \text{ [days]}] \times (1 \text{ ft./12 inches}) \times 14,406 \text{ ft.}^2 \times 7.48 \text{ gal/ft.}^3 = 8,954 \text{ gals/day}$$

Once again, five percent would be diverted as boron waste, therefore:

$$\text{Average Flow} = [(0.95 \times 8,954 \text{ gals/day}) + 24,400 \text{ gals/day}] = 32,906 \text{ gals/day}$$



**APPENDIX D--RESPONSE TO COMMENTS**

No comments received.